# Custom Geomaps Luxemburg for Visual Analytics 7.x – SAS 9.4M6

The map polygons used in this document can be found on the Public data portal of Luxembourg

<https://data.public.lu/en/datasets/limites-administratives-du-grand-duche-de-luxembourg/>

<https://download.data.public.lu/resources/limites-administratives-du-grand-duche-de-luxembourg/20200609-102703/limadmin-shp.zip>

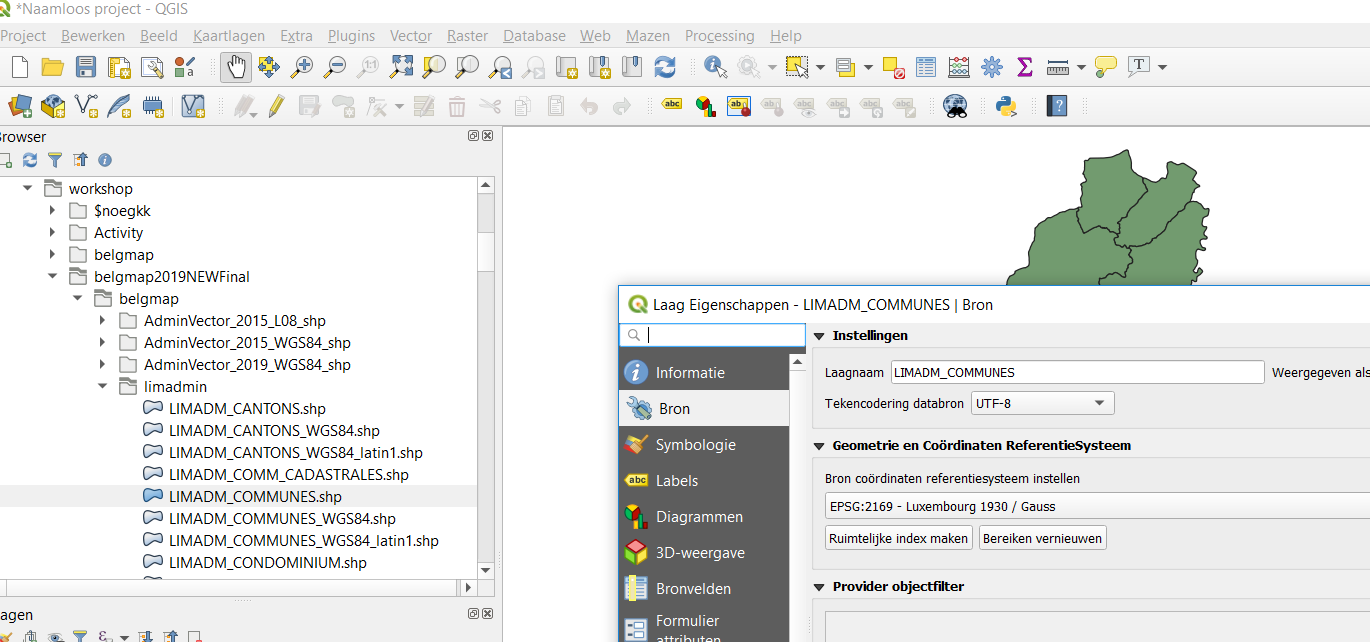
This Shape file is stored in the Coordinate System of Luxembourg: Système de coordonnées LUREF EPSG:2169.

SAS Visual Analytics 7.5 uses: EPSG: 4326 or WGS84 as default projection.

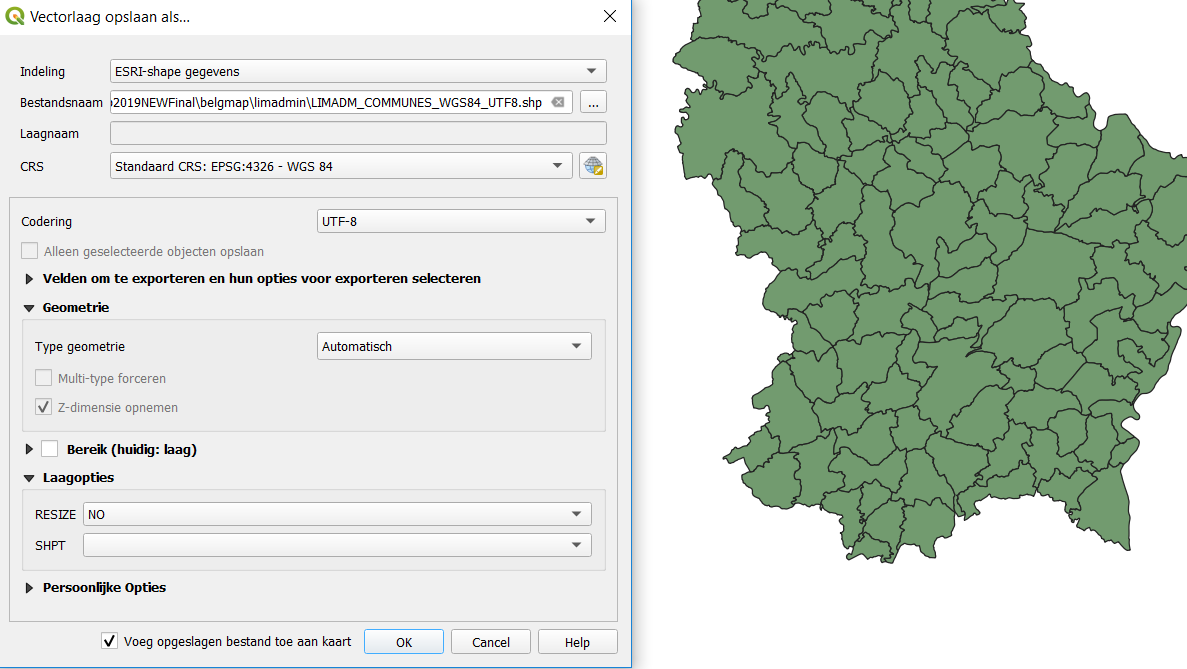
In SAS Visual Analytics 8.x you can also use other projections like LUREF or EPSG:2169.

In order to change the projection, I have opened the Shape files in qGIS:

1. Check the layer properties if they reflect the correct Encoding (UTF-8) and Projection (EPSG2169)



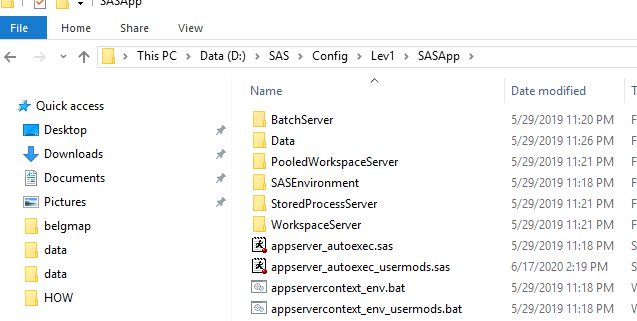
1. I have created serval versions of the shape files to match your SAS 9.4 Encoding (lating1 or UTF-8) and projection (LUREF or WGS84) Save the map layer to a new Shape file that you can import with SAS: LIMADM\_COMMUNES\_WGS84\_UTF8.shp



## Import the LUMAPS in your SAS 9.4 environment:

1. Unzip le lumapsv2\_20200618.zip to the folder d:/workshop/lumap (or another folder)
2. The folder should contain the limadmin, sasdata, sascode folder
3. Open the MasterScriptLU.sas in EG or SAS Studio (or open the GEOLUMAP EG Project)
4. Adapt the macro variables:
   1. path macro variable so it corresponds to the location where the folders above can be found.
   2. Encoding macro variable so it corresponds with latin1 or utf8 (two versions of Shape files that contain the map polygons) important for the commune where you have accents
5. Create in the SAS Config directory the MAPSCSTM Library:

Open the appserver\_autoexec\_usermods.sas (make a backup copy first, just in case).

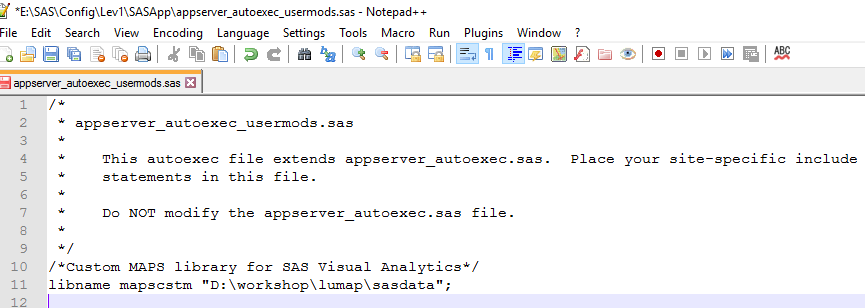


Insert the following code to assign the MAPSCSTM library at startup of the SASApp server:

In your server config file: /SAS/Config/Lev1/SASApp/appserver\_autoexec\_usermods.sas (make a backup first) then add the following code:

/\*Custom MAPS library for SAS Visual Analytics\*/

libname mapscstm "<yourpath>\lumap\sasdata";



1. Make a backup of the tables in valib: ATTRLOOKUP and CENTLOOKUP (there is one in the MAPSCSTM (from a windows environment, latin1)
2. Run the MasterscriptLU.sas on your SASApp server.
3. This script will update the ATTRLOOKUP and CENTLOOKUP datasets

Non-Visual Analytics usage of the Map datasets:

If you wish to use the Map datasets in other SAS Tools, like SAS Enterprise Guide of SAS Studio:

You could consider using the LUREF Projection instead of WGS84.

See the **Example\_GeocodingLUAddresses.sas** in the sascode directory.

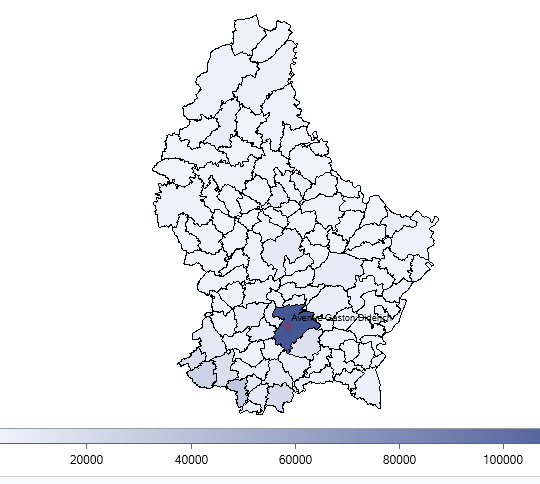
1. Geographic shape files are in LUREF projection and UTF-8 encoding. Municipalities are not referencing postalcodes, but LAU2 codes.
2. Addresses are also in LUREF projection and UTF-8 encoding

So make sure your SAS session runs with Unicode encoding (supports UTF-8).

* The addresses file can be downloaded, and you could lookup an address, by numero, rue, localite, postalcode.
* [https://data.public.lu/en/datasets/adresses-georeferencees-bd-adresses/](https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdata.public.lu%2Fen%2Fdatasets%2Fadresses-georeferencees-bd-adresses%2F&data=04%7C01%7Cpaul.van.mol%40sas.com%7Cd7587c6566884a97e82a08d87a5d74fb%7Cb1c14d5c362545b3a4309552373a0c2f%7C0%7C0%7C637393889106683595%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=zrdGemoSOUoze4E%2FmqbThFfr%2BiHL4%2Fqf5Q%2Ff%2B00YF60%3D&reserved=0)

Then you can plot it with proc SGMAP (new since SAS 9.4M5). If you don’t have that, then use SAS proc GMAP instead.

With proc SGMAP you can have a combination of choromap (displays municipalities) and on top of that a scatter x y plot of the postal\_codes or streets that you would want to display.

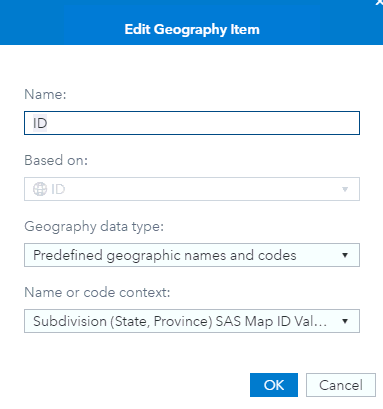


## Using the maps in a VA Report:

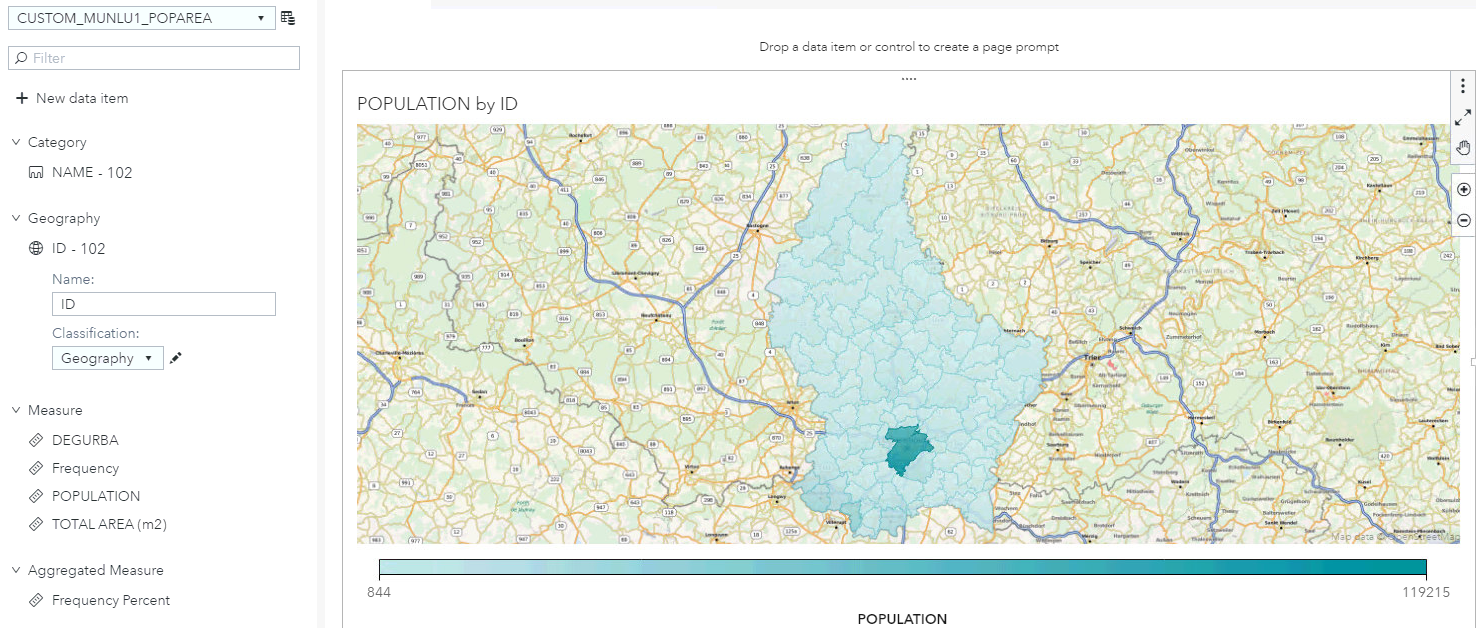
Municipality map: I’m using LAU codes (Local Area Unit – LAU2) from Eurostat.

All LAU Codes start with a non-existing 2 letter abbreviation: ZL-

Join your Municipalities to the MAPCSTM\_MUNLU1\_TEST dataset to lookup the correct codes to use.



I have included a sample datasets: CUSTOMLU1\_POPAREA with population and Area of the Municipalities.



Cantons:

I’m using the LU-CA (ISO 3622) codes for the Luxemburg cantons

LU-CA Canton Capellen

LU-CL Canton Clervaux

LU-DI Canton Diekirch

LU-EC Canton Echternach

LU-ES Canton Esch-Sur-Alzette

LU-GR Canton Grevenmacher

LU-LU Canton Luxembourg

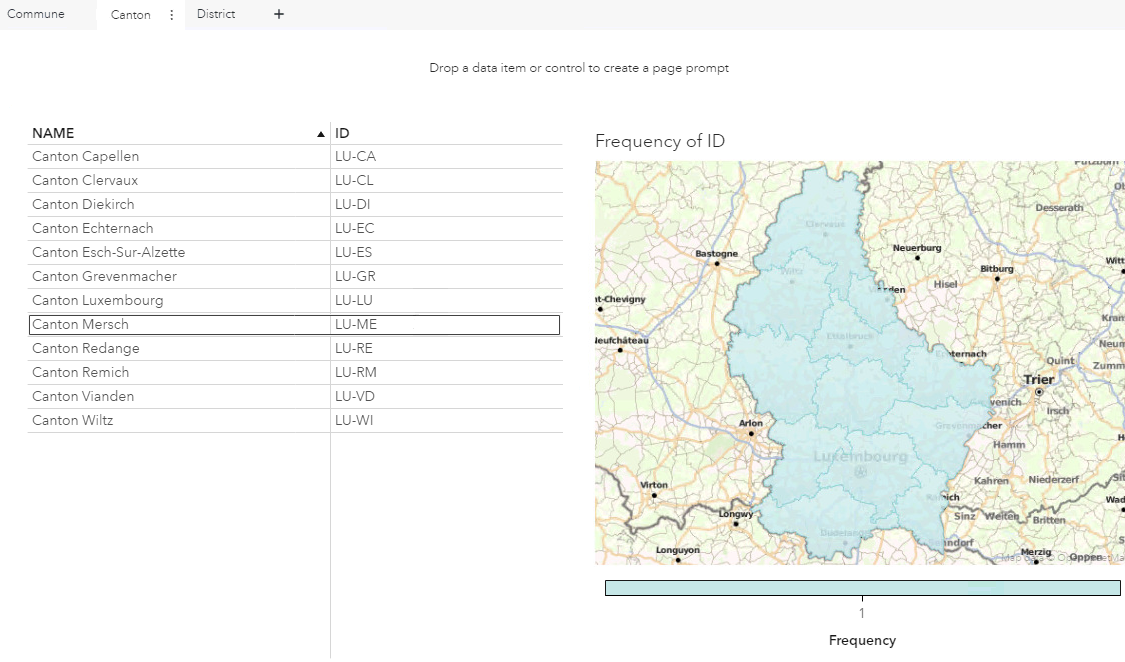
LU-ME Canton Mersch

LU-RE Canton Redange

LU-RM Canton Remich

LU-VD Canton Vianden

LU-WI Canton Wiltz



District: abolished in 2015. I have created 3 ids that are fictive: ZD-1, ZD-2, ZD-3.

